

## SEQUENCE LISTING

<110> DAICEL Chemical Industries LTD.

<120> Novel (R)-2,3-butanediol dehydrogenase

<130> D1-A0009

<140>

<141>

<150> JP 2000-333363

<151> 2000-10-31

<160> 17

<170> PatentIn Ver. 2.1

<210> 1

<211> 1143

<212> DNA

<213> *Pichia angusta*

<400> 1

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acggacttga aagaattcac atattctgga ggtcctgttt tttccctaa acaaggcacc 180  
aaggacaaga tttcgggata cgaacttctt ctctgtcctg gacatgaatt tagcggaacg 240  
gtggtcgagg ttggctctgg tgtcacaagt gtgaaacctg gtgacagagt cgcagttgaa 300  
gctacgtcgc attgtccga cagatcgcgc tacaaggaca cggtcgcca agaccttggg 360  
ctctgtatgg octgccagag cggatctccg aactgctgtg cgtcgtgag cttctgcggt 420  
ttgggtgggt ccagcggcgg ttttgccgag tacgtcgtt acggtgagga ccacatggtc 480  
aagctgccag actcgattcc cgacgatatt ggagcactgg ttgagcctat ttctgttgcc 540  
tggcatgctg ttgaacggcg tagattccag cctggtcaga cggccctggt tcttgaggga 600  
ggtcctatcg gccttgccac cattcttgcg ctgcaaggcc atcatgcggg caaaattgtg 660  
tgttccgagc cggccttgat cagaagacag ttgcaaagg aactgggcgc tgaagtgttc 720

gatccttcta catgtacga cgcaaatgct gttctcaagg ctatggtgcc ggagaacgag 780  
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gccacgggac cttctggaat cgccgtcaat gtggccgttt ggggagacca cccaattgga 900  
ttcatgcaa tgtctctgac ttaccaggag aaatacgcta cgggtccat gtgctacacc 960  
gtcaaggact tccaggaagt tgtcaaggcc ttggaagatg gtctcatatc ttiggacaaa 1020  
gcgcgcaaga tgattacagg caaagtccac ctaaaggacg gagtcgagaa gggctttaaa 1080  
cagctgatcg agcacaagga gaacaatgtc aagatcctgg tgacgccgaa cgaggtttcc 1140  
taa 1143

<210> 2

<211> 380

<212> PRT

<213> *Pichia angusta*

<400> 2

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1 5 10 15

Thr Val Pro Glu Pro Glu Ile Lys Asn Pro Asn Asp Val Lys Ile Lys

20 25 30

Val Ser Tyr Cys Gly Ile Cys Gly Thr Asp Leu Lys Glu Phe Thr Tyr

35 40 45

Ser Gly Gly Pro Val Phe Phe Pro Lys Gln Gly Thr Lys Asp Lys Ile

50 55 60

Ser Gly Tyr Glu Leu Pro Leu Cys Pro Gly His Glu Phe Ser Gly Thr

65 70 75 80

Val Val Glu Val Gly Ser Gly Val Thr Ser Val Lys Pro Gly Asp Arg

85 90 95

Val Ala Val Glu Ala Thr Ser His Cys Ser Asp Arg Ser Arg Tyr Lys

100 105 110

Val Asn Val Ala Val Trp Gly Asp His Pro Ile Gly Phe Met Pro Met  
290 295 300

Ser Leu Thr Tyr Gln Glu Lys Tyr Ala Thr Gly Ser Met Cys Tyr Thr  
305 310 315 320

Val Lys Asp Phe Gln Glu Val Val Lys Ala Leu Glu Asp Gly Leu Ile  
325 330 335

Ser Leu Asp Lys Ala Arg Lys Met Ile Thr Gly Lys Val His Leu Lys  
340 345 350

Asp Gly Val Glu Lys Gly Phe Lys Gln Leu Ile Glu His Lys Glu Asn  
355 360 365

Asn Val Lys Ile Leu Val Thr Pro Asn Glu Val Ser  
370 375 380

<210> 3

<211> 10

<212> PRT

<213> Pichia angusta

<400> 3

Lys Pro Gly Asp Arg Val Ala Val Glu Ala

1 5 10

<210> 4

<211> 21

<212> PRT

<213> Pichia angusta

<400> 4

Ala Thr Ser His Cys Ser Asp Arg Ser Arg Tyr Lys Asp Thr Val Ala

1 5 10 15

Gln Asp Leu Gly Leu

20

<210> 5

<211> 6

<212> PRT

<213> *Pichia angusta*

<400> 5

Phe His Ala Ala Phe Asp

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5

<210> 6

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: an artificially synthesized primer sequence

<220>

<221> misc\_feature

<222> 6, 9, 15, 18

<223> n is a or c or g or t.

<400> 6

aarccnggng aymgngtngc

20

<210> 7

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: an artificially  
synthesized primer sequence

<220>

<221> misc\_feature

<222> 9, 12

<223> n is a or c or g or t.

<400> 7

tcttcaang cngcrtgraa

20

<210> 8

<211> 530

<212> DNA

<213> Pichia angusta

<400> 8

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tgctgtgcgt cgtgagctt ctgcggtttg ggtgggtgcc gggcggttt tgccgagtac 180  
gtcgtttacg gtgaggacca catggtaag ctgccagact cgattccga cgatattgga 240  
gcactggttg agcctatttc tgttcctgg catgctgtg aacgcgctag attccagcct 300  
ggtcagacgg ccctggttct tggaggaggt cctatcggcc ttgccaccat tottgctctg 360  
caaggccatc atcggggcaa aattgtgtgt tccgagcgg cttgatcag aagacagttt 420  
gcaaaggaa tcggcgctga agtgttcgat cttctacat gtgacgagc aaatgctgtt 480  
ctcaaggcta tggtgccgga gaacgaggga ttccacgcc cttcgatga 530

<210> 9

<211> 26

<212> DNA

<213> Artificial Sequence

<223> Description of Artificial Sequence:an artificially synthesized primer sequence

ttggcatgcg atctgtcgga gcaatg

26

&lt;211&gt; 27

## <212> DNA

### ⟨213⟩ Artificial Sequence

<223> Description of Artificial Sequence:an artificially synthesized primer sequence

tgagcatgca aatgctgttc tcaaggc

27

&lt;211&gt; 107

## <212> DNA

〈213〉 *Pichia angusta*

gaatttagcg gaacggtggt cgaggttggc tctggtgtca caagtgtgaa acctggtgac 60  
agagtcgcag ttgaagctac gtcgcattgc tccgacagat cgcatgc 107

107

<211> 706

## <212> DNA

〈213〉 *Pichia angusta*

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cgactgctct	ggtgttcttc	agacattcac	cacctcaatt	gtgccacgg	gaccttctgg	120
aatcgccgtc	aatgtggccg	tttggggaga	ccaccaatt	ggattcatgc	caatgtctct	180
gacttaccag	gagaaatac	ctaccggctc	catgtgtctac	accgtcaagg	acttccagga	240
agttgtcaag	gccttgaag	atggtctcat	atctttggac	aaagcgcgca	agatgattac	300
aggcaaagtc	cacctaaagg	acggagtcga	gaagggcttt	aaacagctga	tcgagcacia	360
ggagaacaat	gtcaagatcc	tgtgtacgcc	gaacgaggtt	tcctaactaa	taatatacat	420
acatcataca	tatgtatgtc	ctagagccaa	gacttgcgca	ttaggaaaaa	tagctggtag	480
tttgatttat	ggtggccggc	ctcccaggaa	attaatctat	gatttacata	tggactcgat	540
tacgtaacag	gtgctgagca	tttaataatt	acctactatt	ttctaaatta	gtaaattgta	600
tgtttcttga	gcaggaggag	atactagagc	aatttcaaaa	catctccaat	tgccaaatcc	660
ctgtgtccga	acagattgca	ttgctagagt	ctgtgaactg	gaattt		706

<211> 620

<213> *Pichia angusta*

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gaattttccg	cgctaattcca	gtcaacggta	acaagaccag	gatggagttt	gaatattttc	180
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aggatatttg	gctgtgtgag	gcggcccaac	agaaccttat	aagtggggtg	taccaacagg	300
gcttgctgca	tcctaaaaaa	gaagtcgggg	tggtttacta	ccagtcgctg	gttcgtgaaa	360
gaataatggc	ttagctccga	gatgtggagg	cagtctggtc	agactgtgcg	gcaattaaat	420
aagacgcgga	tgtactgcac	cagagtgaat	aaaggaattc	caatttcgata	gcaaattattg	480
ctgtaataat	gagtgaccag	atttattacc	gaacctagcc	agccgggggt	tttttacaca	540
ataggaaaaa	aaggactcga	ttatttcgatg	ctgctgcaaa	tcacgccaga	cataataagt	600
caccgcgttta	ctccgcatgc					620

<211> 30



<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:an artificially  
synthesized primer sequence

<400> 14

tgccctgcagc gccagacata ataagtcacc

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<210> 15

<211> 523

<212> DNA

<213> *Pichia angusta*

<400> 15

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gattaatggt tctggacggc taaatcattg atcactgcgt ccgggacctc gtaccgacgt 120  
ggaaattagc cggcactcgg ttgtgagaga ttatcctata taaaccacaa aatcctatct 180  
cccttttgcc aatgaaaggt ttactttatt acggtacaaa cgatattcgc tactccgaaa 240  
cggttcctga accggagatc aagaatocca acgatgtcaa gatcaaagtc agctattgtg 300  
gaatctgtgg cacggacttg aaagaattca catattctgg aggtcctgtt ttttcccta 360  
aacaaggcac caaggacaag atttcgggat acgaacttcc tctctgtcct ggacatgaat 420  
ttagcggaac ggtggtcgag gttggtcttg gtgtcacaag tgtgaaacct ggtgacagag 480  
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<210> 16

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:an artificially  
synthesized primer sequence

30

### <213> Artificial Sequence

<223> Description of Artificial Sequence:an artificially synthesized primer sequence

28